AMENDMENTS TO THE CLAIMS

Listing of Claims

1. (Currently Amended) A wireless base station transmitter comprising a digital front end and an analog back end, said digital front end and analog back end connected through at least one digital-to-analog converter having a full scale range, said base station transmitter comprising:

at least one multiplier in the digital stream before said at least one digital-to-analog converter for introducing digital gain to a signal by scaling a digital representation of said signal ~~to the full scale range of said at least one digital-to-analog converter~~by a scaling factor determined from a received equipment setting of at least one component of said base station.

2. (Original) The wireless base station transmitter of claim 1, further comprising at least one peak-to-rms ratio reducer before said at least one digital-to-analog converter, for constraining the signal peaks of said signal with digital gain, to a level that does not exceed the maximum power tolerances of said base station transmitter.

3. (Currently Amended) The wireless base station transmitter of claim 1 wherein the digital representation of the signal to be transmitted comprises I and Q components and said I component is input into a first digital-to-analog converter and said Q component is input into a second digital-to-analog converter, wherein said at least one multiplier comprises:

at least one first multiplier in the digital stream before said first digital-to-analog converter for introducing digital gain to said I component by scaling the digital representation of said I component ~~to the full scale range of said first digital-to-analog converter~~by a scaling factor determined from a received equipment setting of at least one component of said base station; and

at least one second multiplier in the digital stream before said second digital-to-analog converter for introducing digital gain to said Q component by scaling the digital representation of said Q component ~~to the full-scale range of said second digital-to-analog converter~~by a scaling factor determined from a received equipment setting of at least one component of said base station.

4. (Original) The wireless base station transmitter of claim 3, further comprising:

at least one first peak-to-rms ratio reducer for constraining the signal peaks of said I component of said signal with said digital gain, to a level that does not exceed the maximum power tolerances of said base station transmitter; and

at least one second peak-to-rms ratio reducer for constraining the signal peaks of said Q component of said signal with said digital gain, to a level that does not exceed the maximum power tolerances of said base station transmitter.

5. (Original) The wireless base station transmitter of claim 1 wherein said transmitter is a Code Division Multiple Access transmitter.

6. (Currently Amended) A method for transmitting a radio frequency signal from a base station transmitter comprising a digital end and an analog end, wherein said signal is to be amplified prior to transmission, said method comprising the steps of:

applying a digital gain to the radio frequency signal at said digital end of said base station transmitter, wherein the digital gain scales the signal ~~to a full scale range of at least one digital-to-analog converter~~by a scaling factor

determined from a received equipment setting of at least one component of said base station;

converting said radio frequency signal with said digital gain, into analog form; and

transmitting said analog radio frequency signal.

7. (Original) The method of claim 6 wherein said radio frequency signal comprises an I component and a Q component and where said step of applying digital gain is separately applied to said I and Q components.

8. (Original) The method of claim 6 further comprising the step of constraining said signal with said digital gain such that peak values of said digital gain are limited by the maximum power tolerance of said base station transmitter.

9. (Original) The method of claim 8 wherein said radio frequency signal comprises an I component and a Q component and wherein said constraining step is separately applied to said I and Q components.

10. (Previously Presented) The method of claim 6 wherein said converting step is performed with at least one digital-to-analog converter having x-bit input lines and wherein said step of applying digital gain further comprises the step of multiplying said digital representation of said voltage of said radio frequency signal by a factor equal to $(2^{x-1}-1)$/(the peak voltage value of said frequency signal).

11. (Previously Presented) A method for computing an analog gain reduction in a base station in which digital gain is applied to a signal to be transmitted, said method comprising the steps of:

receiving specific equipment settings of at least one or more components of said base station;

using at least one of said specific settings, to compute a maximum expected value of said signal;

using said maximum expected value, to compute a desired digital gain (e); and

using said computed desired digital gain, to compute a closest analog gain reduction setting (f).

12. (Previously Presented) The method of claim 11 wherein said signal comprises an I component and a Q component and wherein said step of computing a maximum expected value of said signal further comprises computing a maximum expected value of each of said I and Q components of said signal.

13. (Previously Presented) the method of claim 12 wherein said specific equipment settings comprise one or more of the following:

a signal processing gain (c) for root mean square counts to digital gain units appropriate for one or more channel elements used by said base station, each of said channel elements to support at least one call;

a maximum allowed ten-minute average power for said signal, (x);

a maximum allowed two-second average power overshoot for said signal, (y);

a constraining peak-to-average ratio set-point for said base station (a);

an analog gain reduction designed in a radio component of said base station (r);

the bit size capacity "b" of one or more digital-to-analog converters of said base station;

an analog gain reduction for adjusting the base station coverage footprint; and

an allowed analog-to-gain reduction increment.

14. (Previously Presented) The method of claim 13 wherein said maximum expected values of said I and Q components are computed as $c*((10^{y/10})*(x))^{1/2}/2^{1/2}$, where y is measured in dB and x is measured in digital gain units squared.

15. (Cancelled)

16. (Original) The method of claim 13 wherein said desired digital gain for each of said I and Q components are calculated as $(2^{b-1}-1)/(c*10^{a/20})$ where a is measured in dB.

17. (Original) The method of claim 16 wherein b equals 12.

18. (Previously Presented) The method of claim 13 further comprising the step of determining a current analog gain reduction setting of said base station, said current analog gain reduction setting of said base station being designated as (d), wherein said closest analog gain reduction setting is computed as $f = -r+d+20*\log_{10}$ (e) rounded off to the nearest allowed analog gain reduction increment.

19. (Previously Presented) The method of claim 12 further comprising the step of computing an actual digital gain for each I and Q component of said signal, using said closest analog gain reduction setting.

20. (Original) The method of claim 19 wherein said actual digital gain is computed as $10^{f/20}$, where (f) is measured in dB.